

Personality and Age*

By Dr. Ll. Wynn Jones

A FEW years ago the readers of many German newspapers were invited by Giese to give an account of the signs by which they noticed that they had become old, and to say at what age these signs first appeared. When these reports were analysed, it appeared that the average age of becoming subjectively old was forty-nine years, but this age of becoming old varied widely with the individual—indeed from age eighteen to eighty-two.

The bodily signs were twice as numerous as the mental. The bodily signs in decreasing order of frequency from 17.4 to 1.2 per cent may briefly be summarised thus: (1) motor (muscles, back, teeth, bones, extremities), (2) nerves (including memory and insomnia), (3) sensory (eye, ear), (4) skin (hair, wrinkles), (5) fatigue, (6) sexual, (7) circulatory (heart, arteries), (8) metabolic (sugar, gout, fat), (9) digestive, (10) kidney, (11) respiratory.

It would, of course, be expected that the layman would be more likely to refer to bodily symptoms than to mental, and it was natural that the more educated should show a higher percentage of mental signs.

The subjects who reported mental signs were divided into three classes:

(1) The negatory type. About 18 per cent of those who reported mental signs opposed the suggestion of being old and either indignantly refused to acknowledge it or perhaps referred to the health or longevity of their stock.

(2) About 38 per cent ascertained that they were old by noting the way they have been treated by the outside world in various situations and the like.

(3) About 44 per cent reported experiences from their own introspections—it might be some intellectual change in reaction such as the emergence of old recollections, or it might be an affective change such as a disinclination for amusements.

It is important that bodily and mental manifestations certainly do not go together and have widely different values for different individuals. Some lay great stress on bodily signs and scarcely any on the mental, while others do just the reverse. It is not, of course, suggested that the percentages reported above would agree with medical diagnosis, as the subjects belonged to a sample of the general population. Moreover, many of the physical

symptoms reported had probably a mental origin, for, as Prof. M. Greenwood stated in a recent lecture on "The Temperamental Factor in Industry", "it is becoming realised more and more how easily emotional disturbances may result in bodily ills that can be cured only by dealing with their psychological causes".

Although psychologists have exhibited great interest in the child and the adolescent, yet there remain five or six decades of human life relatively untouched. At least four recent investigations merit our attention. They were initiated by Terman, Thorndike, Walter Miles and Charlotte Bühler respectively. It is significant that each had already made outstanding contributions in child psychology, and each research was furthered by a grant, so that a band of experts were able to collaborate and produce results which would be quite unattainable by a single investigator who had to meet the charges out of his own pocket.

In 1926 there appeared the second volume of Terman's "Genetic Studies of Genius". It is entitled "The Early Mental Traits of Three Hundred Geniuses", and the investigations were carried out by Dr. Catherine M. Cox (now Mrs. Walter R. Miles) under the direction of Terman. It was concluded that youths who achieve eminence have, in general, a heredity above the average and superior advantages in early environment: they are characterised not only by high intellectual traits, but also by persistence of motive and effort, confidence in their abilities, and great strength or force of character.

Thorndike's "Adult Learning" appeared in 1928. His purpose was to study the changes in the amount and changes in the nature of ability to learn from about age fifteen to about age forty-five, and especially from age twenty-five to age forty-five. Some of the conclusions may be briefly summarised:

(1) The differences in rate of learning between old and young are small in comparison with the differences within either group, and when factors other than age are equalised the influence of age approaches zero.

(2) Adults learn much less than they might, partly because they under-estimate their power of learning, and partly because of unpleasant attention and comment. It is disuse and lack of practice and not inner degeneration which is likely to affect learning.

* From the presidential address to Section J (Psychology) of the British Association, delivered at Norwich on September 6.

(3) Ability to learn a systematic logical language, Esperanto, rises from 8 to 16 years and probably to 20: it is then stationary to 25 or later and then drops very, very slowly to 35 and somewhat more rapidly, but still very slowly, to 45 or later.

(4) The gain made in 50 or 100 or 500 hours of study of a modern language by a group of any age from 20 to 40 will be greater than the gain made by a group aged 8 or 10 or 12. The facts are in flat contradiction to the doctrine that childhood is the period for easiest learning to read, write, or understand the hearing of a language.

(5) Learning representing an approximation to sheer modifiability unaided by past learning shows more inferiority in the case of adults than was indicated by the experiments taken as a whole. Actual learning of such things as adults commonly have to learn shows, however, considerably less.

(6) The curve of ability to learn from 22 to 42 is a very slow decline, and this decline is no greater for inferior intelligence than for superior.

Thorndike studied all sorts of learning and in each case analysed the curve of ability to learn in relation to age. Although he realises that a curve of total or average ability may be unattainable, yet he was able to conclude in general that nobody less than forty-five years of age should restrain himself from trying to learn anything because of a belief that he is too old to be able to learn it. "If he fails in learning it, inability due directly to age will very rarely, if ever, be the reason. The reason will commonly be one or more of these: He lacks and always has lacked the capacity to learn that particular thing. His desire to learn it is not strong enough to cause him to give proper attention to it. The ways and means which he adopts are inadequate, and would have been so at any age, to teach him anything. He has habits or ideas or other tendencies which interfere with the new acquisition, and which he is unable or unwilling to alter. In the last case mere age may have some influence."

Thorndike's conclusions are particularly important when we consider schemes for adult education, and it is interesting to see how well his experimental findings agree with Cicero's dicta on age: "But, you argue, the memory grows feebler. I believe it does unless you practise it, or if you are by nature rather dull. . . . What of lawyers, pontiffs, augurs, philosophers when they are old? How much *they* remember! The old retain their wits, provided their earnestness and energy lasts; and this happens not only with men who are illustrious and who have held high office, but also in a life of privacy and repose."

Having reported facts concerning the relation of adult learning to age, we may pass on to con-

sider some of the most important human abilities in their relation to age, and noteworthy in this respect are the Stanford Later Maturity Publications, which have appeared from 1931 onwards under the direction of Prof. Walter R. Miles, and which were aided by a grant from the Carnegie Corporation. A reference to some of these abilities is now necessary.

SENSORY AND MOTOR ABILITIES

The importance of abilities such as reaction speed and co-ordination of movements in the various industries and sports scarcely needs mention. Motor skills are so varied that each has to be studied by itself, and although some evidence for group factors in this field has been obtained, yet in the main it is the specificity of each ability which is striking; and this is not surprising when it is considered that some demand considerable visual acuity, others visual attention, others muscular power, others neuro-muscular speed of reaction, and so forth.

Probably visual acuity is at its maximum in the 'teens. It is probably one of the first physiological functions to show a very slight deterioration with age. About the age of fifty years, on the average, this deterioration may become sufficiently serious to handicap the individual in occupations where visual requirements are exacting. In industry, of course, there are other factors which affect the issue, such as the efforts of an employer to get cheaper, that is, younger, labour, or the effort of the employee himself to acquire a more responsible position. The more striking fact, according to Miles, is the relatively small, although steady, decrement shown throughout the life-span in tests such as reaction speed or rotary motility. "Guessed on the basis of what industry has popularly said of the old and also in terms of the derogatory reports made by old people about themselves, the situation has appeared far harsher than the objective data warrant."

INTELLECTUAL ABILITIES

Under this heading may be considered tests of memory, manipulations of symbols and of space areas, interpretations of meaning in verbal form and all the so-called higher mental functions which figure in tests of intelligence. Here again the deterioration due to age as such is relatively small. The differences between individuals at the older ages are often quite marked, so that other factors are probably at least as weighty as age in accounting for an individual's actual score. Thus Sorenson found that the mental abilities of adults who participate in schemes of adult education are maintained at a high level over a long span of adult years.

Miles also points out that when speed is the stressed element in an intelligence test for adults, then the decrement due to age is greater than it is when power in unlimited time is stressed. The fact that intelligence tests are usually standardised for children also points to the need of further research when dealing with adults.

INTERESTS

Here we turn to one of the Stanford Later Maturity Publications—namely, “Change of Interests with Age”, by Prof. Edward K. Strong. It is based on examination of more than two thousand men between the ages of twenty and sixty years representing eight occupations. The following quotation gives the author’s point of view: “If ‘vocational interest’ is defined as ‘the occupation an individual likes best now’, then the conclusion must be reached that vocational interests are very unstable. There are ample data to prove that boys and girls and also older persons change their ‘first choices’ very frequently, and in most cases without apparent rhyme or reason. But if ‘vocational interest’ is defined as ‘the sum total of all interests that bear in any way upon an occupational career’, then we find surprising stability, certainly among adults, and, as far as we have been able to judge, also among young men of college age and presumably among still younger people.”

That is to say, just as we do not probe an individual’s intelligence by one test but by as many as we can afford time for, so it should be with interest.

The slight differences found between men of twenty-five and fifty-five years of age seem to indicate that interests are not particularly affected by years of activity in a given occupation, and that therefore interests are responsible for choice of occupation rather than a resultant of it.

Older men are no more catholic in their interests than younger men, but their likes and dislikes are not identical with those of younger men. Thus the older men are not so interested in situations involving physical hazards, or in anything which interferes with established habits. This factor appears to be of great significance for both employer and employee. Many an employer is unsuccessful not so much for lack of abilities, but owing to a disinclination to introduce a change, and the old employee often becomes unemployed not on account of inability, but because he has no desire to change his methods when changes are deemed essential by the management.

I now turn to the extraordinarily interesting book of Prof. Charlotte Bühler, “Der Menschliche Lebenslauf als Psychologisches Problem”, which was published in 1933. The course of man’s life is

studied by the aid of two hundred published biographies of poets, writers, inventors, men of science, statesmen, musicians, painters, theologians, business men, financiers, actors, singers, sportsmen and philosophers. For comparison, fifty life-histories were obtained from the Old People’s Homes in Vienna.

Life is regarded from several aspects: as a biological phenomenon, as a series of events and experiences, and from the point of view of work produced. Its normal structure—ascend, culmination and decline—is discussed. It is impossible to do justice to this pioneer study in a brief sketch, and I will only single out what appears to be the importance of age in athletic records. Here, then, Prof. Bühler has at hand the severe tests of the athletic field as substitutes for psychological tests in order to ascertain when various motor abilities are at their maxima in the case of the best athletes. On analysing the best lists for the year 1930 the following were the results:

Individual Sports		Age.	Group Sports		Age.
A. Sprint run	.	23.5	A. Boxing	.	21.9
Long jump	.	23.5	Wrestling	.	22.3
Throwing the javelin	.	24.2	Football	.	23.8
B. Medium run	.	24.3	B. Jiu-jitsu	.	26.0
Hurdles	.	24.5	Hockey	.	26.4
High jump	.	24.8	Tennis	.	28.5
Pole vault	.	25.4			
Putting the weight	.	25.4			
C. Long run	.	25.6	C. Polo	}	up to 50
Rowing	.	26.5	Riding		
Throwing the discus	.	26.9	Trotting		
Weight lifting	.	30.5			
Throwing the hammer	.	31.0			

It is characteristic of Group A that the activities demand a maximum expenditure of energy per second. Economy of effort plays no part here. In Group B there is demanded economy of effort and a proper distribution of it. As for Group C, in addition to the greatest economy of effort, enormous demands are made on technique which only comes after long experience.

As two typically British sports are not included in the table—namely, cricket and golf—I have attempted to get corresponding figures for batsmen, bowlers and golfers. Taking the season of 1934, the names of eighty-three batsmen who exceeded a thousand runs in first-class cricket appear. The median age is 30 years (the quartiles being 27 and 33 and the extremes 19 and 47). Then the bowling averages were analysed. The median age is again 30 years (the quartiles being 26 and 34 and the extremes 20 and 50).

Taking the names of the forty golfers who headed the Open Championship list in 1934, the median age is about 35 years (the quartiles being 29 and 39 and the extremes 24 and 45).

Taking a still higher standard, it appears that batsmen who have exceeded three thousand runs in a season show a median age of 34.5 years (the

quartiles being 30 and 39 and the extremes 27 and 44).

In golf, the thirty-seven open champions since 1894 show a median age of 31 years (the quartiles being 28 and 37 and the extremes 23 and 44).

THEORETICAL IMPLICATIONS

A most important development in modern psychology is the search for innate, basic, unitary traits of personality. There is accumulative evidence in favour of the existence of a number of unitary traits or factors, and it has been found convenient to denote them provisionally by letters of the alphabet, analogous to a practice of physics and other sciences. This does not in the least imply that their functional interpretation is necessarily less clear than that of concepts such as introversion and the like. It is true that polysyllabic words have sometimes only to undergo a very cursory censorship, but this practice leads to abuses of the language mechanism which may retard individual cerebral evolution. Besides, the less popular use of letters to denote new concepts is not likely to proceed indefinitely, if only for the fact that the introduction of such a letter is preceded by many thousand hours of laborious work.

Closely connected with the study of traits is the difficult question of the effectiveness of past

experiences. Spearman's researches show that retentivity is independent of g , and there is evidence that the old tend to deteriorate in tests of immediate memory. How far is the balance redressed when the extent and variety of all their previous experiences as well as their integration is taken into account? It is scarcely necessary to illustrate the dire effects of lack of experience. Thus the brilliant young debater is often pulverised by one who is dull but elderly. My second example is a very intelligent person who has been totally blind from birth. I found that the subject had no idea at all of the size of the sun as it appeared in the sky. The subject imagined that most stars had five points, but that some had six or even eight, and that a rainbow had the shape of a tied bow, and so forth. Manifestly all knowing, even in the case of the gifted, must start from experiencing.

Now that the method of factorial analysis is becoming increasingly effective, not only in the case of cognitive abilities, but also with regard to personality in all its aspects, it becomes necessary to study age as one of the 'primordial potencies' more systematically, not only during childhood and adolescence, but also throughout the life-span. This will determine the relative importance of the various traits at different stages of life, and in turn will lead to a fuller psychological interpretation of the unitary traits themselves.

Recent Advances in Seismology*

By Dr. F. J. W. Whipple, Kew Observatory, Richmond, Surrey

SEISMOLOGY, the science of earthquakes, is primarily concerned with such questions as where, how and why earthquakes occur, but it is also concerned with the question how the waves generated by earthquakes travel through the earth, and with the question what information as to the constitution of the earth can be deduced from the behaviour of the waves. Living in a country which is seldom troubled by earthquakes, but a country in which the waves from distant earthquakes can be studied, we have a more direct interest in questions of the latter types. This interest has been fostered by the British Association, which has facilitated the discussion and collection of the records from observatories in all parts of the world. This is an enterprise of which we may well be proud.

* Paper read before Section A of the British Association at Norwich on September 9, opening a discussion on recent advances in seismology.

John Milne, who was a great pioneer, organised the collection of observations. He used to publish lists of the readings of the seismograms at as many observatories as possible. On the death of Milne, Prof. H. H. Turner, who was already chairman of the B.A. committee, accepted responsibility for the work, which he transferred to the University Observatory, Oxford, and soon began the publication of the observations in a more convenient form, dealing with each earthquake separately. This arrangement was continued when Turner became president of the Seismological Section of the International Union for Geodesy and Geophysics. The collections of observations are now known as the International Seismological Summary. As the number and efficiency of seismological stations has increased, so the I.S.S. has grown. The Summary for 1930 is a substantial volume of 426 pages. Since Turner's death in